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CORPORATE VENTURE CAPITAL INVESTMENTS**

IAN C. YATES and EDWARD B. ROBERTS
MIT SLOAN SCHOOL OF MANAGEMENT

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ABSTRACT

49 large U.S. corporations that make corporate venture capital (CVC) investments as part of their new business development strategies were studied. Venture capital firms were found to be the key deal source of the more successful CVCs. Market familiarity was found to be even more important than technological familiarity in initiating strategically successful investments in small enterprises. Later round investments performed better strategically than did early round financings. CVC financial success flows from its strategic success, which in turn is influenced favorably by strategic focus.

EXECUTIVE SUMMARY

The strategies of 49 large U.S. corporations using corporate venture capital (CVC) for new business development were studied and evaluated. Venture capital firms were found to be the key deal source for CVCs making investments in small ventures that the CVCs judge to be successful strategically. Successful CVCs frequently first invest in venture capital funds as a venture capital limited partner, then take a more proactive long-run approach by investing side-by-side with private venture capitalists directly in start-ups.

Corporate familiarity with the venture's market was found to be more important in determining strategic success than familiarity with the venture's technology. CVCs must therefore evaluate the venture's market as carefully as the venture's technology and seek to add value to ventures through

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marketing.

Strategically successful CVCs make more investments in later rounds, foster supplementary business relationships between their corporation and venture firms, and exercise less control over their portfolio firms, as compared with less successful CVCs. The financial performance of CVC programs was found to correlate positively with strategic success. CVC managers also report that strategic success results from a focussed strategy.

INTRODUCTION

All companies committed to growth must develop new businesses. A firm's options include developing new products for markets in which it already participates, taking existing products to new markets, or delivering new products to markets it has not traditionally served.

Many firms have discovered the value of corporate venture capital (CVC) as an integral or supplemental part of their strategic new business development program, making equity investments for less than 100 percent ownership of new or young firms. Throughout the history of U.S. business, corporate venturers have participated in some extremely successful start-ups, including DuPont's backing of GM, Sears' minority ownership of Whirlpool, GE and AT&T's funding of RCA, Haloid's (later becoming Xerox) financing of Carlson/Battelle (Rind, 1981), and, more recently, Coming's investment in Genentech, and Compaq's funding of Conner Peripherals.

These extremely successful corporate venture capital investments highlight the potential of CVC as a strategic development tool; however, while CVC offers significant benefits, many corporations have become frustrated with CVC and have discontinued their corporate venturing programs. The complex processes that CVC entails and the sophistication required to execute them effectively has caused many corporations to eliminate CVC programs. In addition, many corporations lack the patience to give CVC programs the long time necessary to grow to a point where they develop significant new businesses. Figure 1 schematically illustrates the various processes of CVC from inception to execution. In approximate chronological order, the tasks of a strategic CVC program are developing the venture program, initiating the investments, managing the investment portfolio, and assimilating investments into the corporation's businesses. Each of these tasks must be executed successfully for the corporation to derive significant strategic benefit from its CVC program.

The successes of one task influence the success criteria for another, complicating CVC program execution further. For example, start-ups which do not meet the original CVC goals and focus may still become desirable investments if they provide products or services used by a number of different portfolio firms and thus can foster synergies within a CVC's portfolio.

This research attempts to establish the critical strategies employed by successful corporate venturers by analyzing the performance of CVC programs in a quantitative framework. Much of the

previous literature on corporate venturing provides anecdotal case studies of a specific firm's or industry's experiences. Only a few prior studies exist that have attempted quantitatively to determine the causes of success of CVC programs.

We first review the literature relevant to corporate venture capital, with particular focus on previous attempts to identify factors critical to the success of CVC programs. The objectives and methodology of our research are then presented. The results are analyzed and discussed next and finally the findings are summarized.

CORPORATE VENTURE CAPITAL STRATEGIES: THE LITERATURE

CVC is primarily a new business development tool to help corporations in moving away from markets and technologies with which they are familiar. (Roberts and Berry, 1985) Further, CVC can be used to supplement other new business development strategies, providing firms with a "window on emerging technologies". (Roberts, 1980)

Because CVC is such a difficult new business development tool to use effectively, many articles have been written to explore the processes involved in CVC. These articles are written by corporate strategic planners, consultants, and private venture capitalists (VCs), all of whom have a different focus when examining the performance of CVC programs. Many articles have even appeared in the "popular" press, including Slutsker (1984), Barns (1984), Posner (1984), Gibson (1986), White (1989), Selz (1990), and Buderl (1990). This review summarizes some of the significant work relating exclusively to CVC and reports factors that authors indicate are critical to the success of CVC development efforts. Literature written by practitioners and consultants involved in CVC is presented first, followed by the additional perspectives derived from academic research.

Practical Experience

In one of the earliest articles describing CVC for new business development, Peterson (1967) discusses DuPont's corporate venturing activities. (See also Gee and Tyler, 1976.) At that time, DuPont probably had had more experience in this type of new business development than any other corporation. Peterson highlights the need for good investment opportunities. DuPont's "deal flow" is reported to have come from four sources: central R&D, other R&D throughout the firm, universities,

government and other research-based agencies, and strategic planning and analysis of future needs. DuPont's appraisal and selection process included answers to three critical questions: Is the potential business large enough? Will its ROI be high enough? Will the proprietary position of the venture offset its risk? These questions have market, financial, and technology dimensions, but lack any evaluation of venture management capabilities, which violates the saying that "it's the jockey, not the horse, that is important in winning the [venture] race" (see MacMillan et al., 1985). Other than the financial return achieved in the long-run, Peterson claims that a corporation derives the additional benefits of fostering an innovative culture in its own organization and developing management expertise.

Hardymon et al. (1983) criticize some of the oversimplifications of Peterson's article, arguing that, whatever their other merits, CVC programs are not a successful means of promoting diversification, as Peterson implied. They say that CVC programs fail for at least four reasons. First, corporations face a restricted universe of investment opportunities and often find themselves "left out" of the venture capital deal syndication network. In partial support Bygrave (1988) provides a detailed study of the importance of "networking" in the venture capital community. Second, corporations using CVC for new business development encounter problems acquiring companies from their portfolios, sometimes called investment stalemate. Third, many corporations see "opaque" technology windows and have difficulty transferring technology from their small company portfolio to their firms' core businesses. Finally, Hardymon et al. assert that a conflict exists between running a focussed diversification program and building a healthy venture capital portfolio, seeing this problem as exacerbated when corporations base venture managers' compensation on the portfolio's financial performance.

While DuPont was the largest CVC of the 1960s and before, Exxon was probably the largest in the 1970s. A senior manager in Exxon Enterprises, Ben Sykes (1986) relates his views on the causes of the rise and fall of Exxon's CVC program. According to Sykes, Exxon's experience shows that if internal venturing is to work, it must be an important mainstream operation. Sykes reports from Exxon data that the venture manager's technical experience is not related to start-up success, while his management experience highly correlates with success. The three primary diversification strategies Sykes advocates are: (1) acquire a large company in the target field; (2) start few R&D-oriented

ventures; and (3) use CVC investments primarily as "probes".

Winters and Murfin (1988) analyze Lubrizol's CVC program, drawing some general conclusions about CVC. They state that the objective of most corporations is the strategic benefits resulting from venture capital investing, such as acquisitions, technology licenses, product marketing rights, international opportunities, and windows on technology. These objectives are frequently mixed with a financial return objective. They report that the most important factors for success of a corporate program are the creation of a high-quality deal flow and the use of outstanding people to interface between the corporation and the private VC world.

Winters and Murfin applaud the creation of a formal CVC subsidiary, like Lubrizol Enterprises, as an effective way to achieve corporate strategic objectives. Even with a venturing subsidiary, the corporation has assets of value to a venture such as "deep pockets", reputation, and marketing and distribution capabilities. Lubrizol's subsidiary structure is seen as facilitating dealings with entrepreneurs, acceptance by the private VC community, and better internal relations within Lubrizol itself. The authors note numerous potential pitfalls encountered by CVC business developers. First, corporations can have inadequate definition of strategic versus financial objectives. Second, corporations tend to be arrogant, particularly those corporations which have been successful at other methods of business development. Third, corporations are slow to respond to prospective deals, which they see too few of anyway. They observe that this lack of quality deal flow is worsened when firms seek to make early stage investments in start-ups.

Private venture capitalists provide an additional perspective on the behavior of CVCs. These VCs invest side-by-side with CVCs and often have CVCs as limited partners in their funds. In addition, some of the VCs which have written articles also draw from prior career experiences as CVC managers. Fast (1981) recommends that CVCs closely emulate the strategies of VCs, because he argues that the financial performance of VCs is superior (see Weiss, 1981). He says CVCs should invest first in VC funds, then, as they learn VC, take a more proactive role. Fast outlines a number of factors which he believes can ensure the success of a CVC program. Like Winters and Murfin (1988), Fast suggests that CVCs be organized as limited partnerships because this structure "forces" patience as corporations cannot divest, investments are staged in a manner consistent with ventures's development

life-cycle, and an easy-to-implement incentive-based compensation system is provided. Further, Fast asserts that CVCs should follow the same intervention and management guidelines as VCs, being hands-off and big-picture oriented, avoiding "micromanagement", and planning for the venture's financing needs.

Kenneth Rind, who worked as a corporate venture capitalist for Xerox before becoming a private venture capitalist, has written extensively on CVC (Rind, 1981; Golden and Rind, 1984; Rind, 1989). Rind concludes that CVC is a useful tool for corporate development, but is difficult to do internally; thus, outside partnership investment can serve as a useful alternative first step or as a supplement. CVC is reportedly difficult because of a lack of appropriately skilled people, contradictory rationales, legal problems between fiduciary responsibility and corporate opportunity, and inadequate corporate time horizons. However, Rind (1989) does point out a number of advantages that accrue to small firms which have a corporate investor such as: assistance in all corporate endeavors, credibility with customers, banks, and others, relief from many specialized aspects of business (i.e., international marketing), immediate income from R&D contracts, deep pockets through a more flexible, lower cost financing package, and, finally, a potential merger partner. Ford and Ryan (1981) discuss some of the benefits of having a corporate partner to aid in marketing efforts in greater detail.

Most recently Hegg (1990) revealed details of 3M's \$75 million global CVC program, with participations in 27 private venture capital limited partnerships (VCLPs). He reports both significant financial returns and strong strategic linkage to 3M's business units, including acquisition of some of the portfolio companies.

Academic Studies

Because CVC has been used as a significant new business development tool for several decades, significant academic research has been devoted to addressing various aspects of CVC. One of the largest programs of this research has been carried out at the Snider Entrepreneurial Center of the Wharton School by MacMillan, Siegel, and co-workers (MacMillan et al., 1985; MacMillan et al., 1987; DeSarbo et al., 1987; Siegel et al., 1988). These works emphasize the importance of corporate venture managers in determining the success of a given CVC program. These key managers must be high-quality, well-compensated, and should be given the flexibility to operate independently, possibly

being established in a group separate from the corporation. These studies indicate that successful CVCs should focus on achieving financial objectives. Thus, CVCs should behave in many respects, such as investment selection and company management, like a private venture capitalist. Their conclusion regarding the similarities between the behavior of successful CVCs and successful private VCs match the opinions of Fast (1981).

Hlavacek et al. (1977) provide early motivation for strategic use of CVC, stating that studies indicate that over 74% of technological innovations originate in small firms. Yet acquisition too frequently removes the advantages that a small company might bring to a large corporation. Successful CVC partnering is reported to result from a threefold strategy. First, corporations should locate a company which has strengths where it has weaknesses. Second, the large firm should have an entrenched and extensive marketing organization that is capable of fully exploiting the venture's proposed technology. Finally, and perhaps most importantly, the large firm must be "hungry" and willing to do everything it takes to ensure the venture's success.

Greenthal and Larson's (1982) information on CVC leads them to caution venturing corporations that they must have realistic goals. Corporations should seek either to acquire new businesses, gain access to new technology, or, most simply, generate a sizable return on investment. Greenthal and Larson believe that organizing CVC with these realistic goals in mind is key. If the corporation is focussed solely on ROI, then becoming a limited partner of a private venture capital fund is appropriate, otherwise the CVC group must be more proactive. They assert that the success of CVC groups is affected primarily by their position in the organization, the management systems controlling the CVC managers, the quality of the CVC managers, and the compensation of these managers.

Levine (1983) expands on Greenthal and Larson's work, concluding that the "inside track" on new technologies should be more important to corporations than ROI. CVCs have problems because they feel that they have to dictate the small firm's product and technology decisions. In addition, CVCs are treated differently by private VCs because they assume that CVCs are not under the gun to liquidate, as private VCs are.

Block, Sykes and their co-workers at New York University have produced additional pertinent recent studies (Block, 1983; Block and Ornati, 1987; Sykes and Block, 1989; Sykes, 1990). Block

and Ornati (1987) find that performance incentives for CVC managers are not essential, because they often lack sufficient time horizons. Sykes and Block (1989) indicate that the two major obstacles to CVC success are (1) conflicts between the formal policies of the large firm and the needs of the small firm, and (2) misdirection of small firm because of irrelevant and damaging corporate management practices.

Sykes' most recent article on CVC (1990) outlines many drivers of strategic success for CVC programs. Sykes surveyed a large number of CVCs and determined that their success depends on mutually beneficial strategic objectives between the small and the large firms, frequent and open communications between the corporation and the venture, and financial returns on investment. Direct, proactive investment is seen to be better if only one strategy is chosen, but being a limited partner in a private VC fund is identified by Sykes as providing "deal flow" for direct investment possibilities. He remarks that effective relationships between CVCs and VCs are built over extended time periods, usually by co-investing and serving together on the boards of directors of start-ups. Factors found not to influence the success of CVC programs are CVC manager experience and compensation, the organizational position of corporate contact, the source of direct investment, and the number of corporate investors in a VCLP.

OBJECTIVES AND METHODOLOGY

Objectives

The study described here is directed at understanding how to improve the process of initiating investments, one stage of the process of new business development through CVC (Figure 1) in which little previous research has been done. The process of initiating investments has been subdivided into three separate, but related, activities: (1) uncovering good investment opportunities; (2) selecting which investments to make; and (3) structuring and managing the investments. Specifically, this research attempts to:

- determine the best methods for CVCs to uncover investment opportunities,
- find the determinants of success in the investment identification process,
- establish guidelines for structuring and managing CVC investments.

Methodology

To study the CVC programs of large U.S. corporations, a questionnaire on direct investment in small companies was sent to over 150 growth-oriented large firms, hoping that this approach would ensure that a large fraction of those corporations using CVC would be contacted. To increase the significance of the questionnaire's results, great care was taken to ensure that the surveys were sent directly to someone involved on a day-to-day basis with new business development. (The complete questionnaire is available from the authors.) 54 firms responded to this survey, with 49 providing complete, quantitative responses. The other five respondents had programs that were not "old" enough for meaningful results, according to their replies. If, as asserted by Sykes (1990), only 80 U.S. firms have CVC programs, 49 firms indeed constitute a broad sample of the corporate venturers. 75% of the respondents were large multinational corporations, with 60% being in the *Fortune* 500 and 15% in the *Forbes* International 500. The responding firms represent a wide range of industries and are believed to be representative of the spectrum of CVCs. Half of the firms (25 of 49) were also contacted in follow-up phone conversations, selected based on their pursuit of a particular strategy of interest to us, as pointed out later in this paper. The telephone conversations qualitatively confirmed the conclusions drawn from statistical analyses and explored some of the more unique approaches to CVC in greater detail. Finally, 22 of the 49 firms responded to another follow-up mail survey (sent to all 49 initial respondents) that focussed on investment structure and venture management. These 22 are a reasonably representative subset of the original group, as is discussed further when these data are analyzed.

For the sake of hypothesis testing a firm is classified as "strategically successful" based on self-assessment by the respondent that the firm's CVC program was producing a rate of new business development that was superior to that from internal development efforts, given the same level of resources. The potential bias in these evaluations is evident and no systematic objective information was collected. Furthermore, although a "success" score on this question could result from poor internal development efforts, it was felt that this would not typically be the case.

This definition of success can be justified for theoretical and practical reasons. First, from a theoretical standpoint, this definition normalizes for firms which are situated in high growth industries and may experience high rates of new business development from all their new business development

activities. In addition, from a theoretical standpoint, normalizing for equivalent resource commitment removes biases introduced by top management decisions to emphasize one mode of new business development over another. From a practical standpoint, despite room for bias in the direction of overly positive appraisal, the definition in fact divided the responding corporations almost in half, with a wide range of self-scores. Most importantly, it provided two groups that exhibit markedly different behaviors and are clearly pursuing dramatically different strategies in their CVCs.

UNCOVERING GOOD INVESTMENT OPPORTUNITIES

Uncovering good investment opportunities that are worth pursuing is extremely difficult; it's like "searching for a needle in a hay stack". A number of studies (Peterson, 1967; Hardyman et al., 1983; Winters and Murfin, 1988; Siegel et al., 1988; Sykes, 1990) identify establishing and maintaining a high quality "deal flow" as critical to the success of CVC programs. To evaluate the deal sources of corporations, their primary sources of investment opportunities as well as the distribution of all sources of investment opportunities were examined. Table 1 shows the average distribution of all deal sources for all 49 firms in the study. In-house people are the largest source of deals (32%), followed closely by venture capital firms (28.2%); together these top two deal sources represent over 60% of all investment opportunities. In his study of CVC strategies, Sykes (1990) also finds these two to be the predominant deal sources, although venture capital firms are identified as being more important in his study (27% for VCs versus 20% for In-house); Sykes' study focusses more on VC limited partnerships, which may account for the quantitative differences.

Figures 2 and 3 show the differences between successful and less successful firms, on the basis of the average of all sources and the primary sources of investment opportunities. Firms that are more successful use venture capital firms as a deal source to a much greater extent than do less successful firms. Table 2 presents a statistical comparison of successful and unsuccessful CVCs, verifying that a statistically significant difference exists between the sources of investment opportunities. The venture capital community is clearly the best source of a high quantity of high quality deals, perhaps because venture capitalists add value to their portfolio firms, thereby reducing the probability of venture failure.

Deal Sourcing from Venture Capitalists

These analyses strongly indicate that a venture capital deal sourcing network plays an integral role in a successful CVC program. To determine how large corporations cultivate such a network, CVCs that were classified as successful and that also had sourced more than 33% of their deals from the venture capital (VC) community were contacted. In addition, a number of venture capitalists with experience in or with corporate venture capital were also interviewed.

These successful CVCs indicate that their primary methods of cultivating deal flow from the venture capital community are:

- investing directly in VC portfolio firms (usually called co-investing),
- networking with VCs without investing (see Bygrave, 1988),
- contacting those VCs which hold some of their corporation's pension assets.

According to VCs (see also Golden and Rind, 1984), the factors which give CVCs credibility in the co-investing process include: reputations of corporate people involved in venturing, demonstrated ability to both generate and share leads, resources to constructively evaluate ventures on a timely basis, and commitment to be in venturing for the long-run. In addition to these qualities, successful CVCs added the following pointers which they said could help corporate venturers become part of the VC community: ability to co-exist with VCs, flexibility with respect to deal structure and ultimate acquisition, and willingness to provide VCs with a "way out" or liquidity in later rounds (see also Slutsker, 1984, and Buderl, 1990).

Based on the interviews, investing in VC funds, i.e. becoming a venture capital limited partner (VCLP), appears to be useful primarily as an entry strategy, to be used in the early stages of the CVC program. Continuing to be a VCLP does not appear to be critical for long-run strategic performance, as corporations have to move into a more proactive role in the venturing process, making and managing direct investments in small companies themselves (see also Fast, 1981).

Although some VCs recommend that a corporation become a VCLP to learn about "how the VC game is played" and to develop credibility within the VC community (see Golden and Rind, 1984), successful CVCs criticized being a VCLP as a long-run strategy for a number of reasons. First, for corporations with a fixed pool of venturing funds, being a VCLP in the long-run is reportedly an "expensive" method of generating deal flow. Second, as a VCLP, some corporations see "opaque"

windows on technology, getting deals only after the fund has rejected them. Alternatively, "opaque" windows may result from corporate venturers' lack of proactive efforts, expecting that they will be "spoon fed" by the VCs. Third, becoming a VCLP may signal that a corporation is unwilling or unable to participate in the high value-adding activities of venture capital, such as deal evaluation and portfolio firm management. Thus, some VCs seem to see corporate VCLPs as "dumb money". The conclusion that being a VCLP is not a long-run strategy may not apply to dedicated, single-corporation VC funds, which can be similar strategically to CVC subsidiaries.

INVESTMENT SELECTION AND STRATEGY

Selecting which investments to make is challenging because, even after an exhaustive search, many investment opportunities are not worth pursuing. Thus, separating the "wheat from the chaff" is a vital part of a successful venture process. Indeed, private venture capitalists, who are not "restricted" by strategic objectives as corporations are, report that they invest in only about 1–2% of all deals they see (Rind, 1982).

In this section, we first discuss the effect of strategy on the success of CVC programs, paying particular attention to strategies of diversification with respect to both market and technology. These analyses lead naturally into a brief discussion of selection criteria for successful CVCs.

The Effect of Diversification

Many studies (see Rumelt, 1982; Peters and Waterman, 1982; Roberts and Berry, 1985; Zirger and Maidique, 1990) report that new business development through diversification is harder than "sticking-to-the-knitting". Our data in Figure 4 also show that new business development in diversified areas through CVC is more difficult than non-diversification investments.

Although a significant difference exists between the average success of diversifying CVC firms and stick-to-the-knitting firms as shown in Figure 4, diversification seems more feasible than is implied by some authors. This finding that CVC is a reasonable method of new business development for diversifying firms is consistent with Roberts and Berry's conclusion (1985) that CVC is the most viable method of new business development for firms seeking to diversify.

Because diversification has both technology and market dimensions, the effects of market and

technology familiarity on the success of CVC programs were examined separately. Figures 5 and 6 show the average success rating for those following market and technology diversification and stick-to-the-knitting strategies. Corporate familiarity with the venture's market is as important in determining strategic success as familiarity with the venture's technology. However, examining the differences between strategically "successful" and "unsuccessful" firms, market familiarity is shown to be even more important in Table 3. That closeness to market is more important than closeness to technology has been noted previously by Sykes (1986), MacMillan et al. (1987), and Roberts and Meyer (1991). Table 3 shows that the market familiarity of successful firms differs significantly, at the 92% confidence level, from that of unsuccessful firms. For technology familiarity, the level of confidence that a difference exists between successful and unsuccessful firms is less than 50%.

Selection Criteria of Successful CVCs

There have been at least four significant studies on the investment selection criteria of CVCs (MacMillan et al., 1987; DeSarbo et al., 1987; Siegel et al., 1988; MacMillan et al., 1985). Table 4 shows the difference in selection criteria of CVCs and VCs from one study. Some natural differences exist, such as the three "strategic" criteria that are used only by CVCs; however, neglecting the two criteria, "articulate in discussing venture" and "track record relevant to venture", might be serious oversights by CVCs. According to Siegel et al. (1988), these two criteria are statistically significant determinants of success. Table 4 also presents information useful for designing selection criteria for corporations considering launching a CVC program.

From conversations with a number of CVCs, it appears that many CVCs seem to have a "blind spot" when it comes to some aspects of investment evaluation (see also Peterson, 1967). CVCs need to make sure their selection criteria are "balanced" with respect to evaluating the venture's market and management team and not too focussed on evaluating just the venture's technology. CVCs with technical backgrounds or who are affiliated with the corporation's R&D may have a greater tendency to overemphasize technology in their selection criteria. The analyses shown in Figures 5 and 6 and Table 3 demonstrate that market familiarity can be even more important than technology familiarity in generating strategically successful outcomes. Thus, CVC investment selection criteria and due diligence should be at least as heavily, if not more heavily, weighted towards the venture's proposed

market as they are to its technology.

INVESTMENT TIMING AND STRUCTURE

Having found and selected a market–technology focus, the timing, structure and management of the initial investment in a venture may define the investment's ultimate strategic potential for the corporation. Incorrectly timed and poorly structured corporate alliances can be as fatal to a start-up as misunderstood markets or infeasible technologies. This section first discusses the stage in the growth of a venture during which the more successful CVCs invest and then treats some of the issues relating to investment structure and management of ventures by the corporation.

The Effect of Venture Age

Investing early in a venture's life is riskier, but a corporation can place more "bets" for its investment dollar and learn sooner about emerging technologies and markets. Figures 7 and 8 contrast the investment timing of more successful and less successful firms. Figure 7 shows that strategically successful CVCs make more investments in later rounds, as compared with less successful firms. Figure 8 highlights that this later round investment strategy is even favored by successful diversifying firms, indicating that this effect is not a stick-to-the-knitting-versus-diversification effect. Table 5 shows that the differences in investment timing between more successful and less successful CVCs are statistically significant, with the strategy of later round investments being much more successful.

At least six possible explanations are plausible for this effect of investment timing. First, the effect might simply represent the expected risk–return tradeoff that changes through the growth of a start-up. Second, in later investments, the match between the venture's strategy and the corporation's strategy can be more easily ensured due to more information being available. Third, in early investments, the corporation may structure the investment so that the incentive for innovation within the venture is removed. Fourth, in forcing start-up companies to have synergies with the corporate portfolio, corporations may "misguide" the venture, as is discussed by Levine (1983). Fifth, corporations that invest early may be too "conservative" and therefore not invest enough to make this strategy work effectively. Finally, the effect may be tautological, reflecting additional later round investments by CVCs into those earlier investments that turn out to be strategic "fits" with the

corporation! Whatever the possible explanation, the results cannot be ignored by CVCs.

The Corporation–Venture Interface

The lower strategic yield from early round investments might potentially be mitigated by well–structured and correctly–managed investments. A second survey, focussed on investment structure, was sent to the respondents of the first survey. While only 22 of the 49 firms responded, analysis of these results provides at least qualitative information regarding the critical behaviors of CVCs. 14 of these 22 respondents were successful by our definition, so this is a reasonably representative group.

Figure 9 shows that on average strategically successful and unsuccessful CVCs use a similar spectrum of investment structures, with both groups using equity or convertible debt over 60% of the time. This similarity in investments may be due to the fact that CVCs must negotiate these investments with the start–up and other investors, all of whom probably prefer corporations to use "straight" equity. The more successful CVC firms do form partnerships in which they are the limited partner (LP) approximately twice as often as do unsuccessful firms. These types of investments are not used frequently, but can be a useful way for corporations to exploit a start–up's technology in a market which is defined by user–type or geography. Again, this is at least in part tautological, i.e., closeness of fit strategically produces greater likelihood of adopting the closer ties of a partnership, and vice versa.

Figure 10 shows the average initial equity ownership percent, extent of supplementary relationships, and magnitude of control of CVCs. The magnitude of CVC control is measured by four different parameters: % of investments in which CVCs manage the operations on a day–to–day basis, % of investments in which CVCs have a board member, % of investments in which CVCs control the board, and % of investments in which CVCs can replace the start–up's CEO. Successful CVCs have a lower average initial equity position than unsuccessful CVCs, which may indicate that successful CVCs place more "bets" by not "putting all their [investment] eggs in one basket". In addition, successful CVCs seem more capable than unsuccessful CVCs of requiring or fostering supplementary business relationships between their corporation and investment portfolio firms. By exploiting these synergies, successful CVCs are able to add more than money to their venture investments. Although fostering

extensive business relationships appears vital to effective CVC performance, exercising excessive control is not, as is indicated by the fact that successful CVCs have a lower fraction of investments in which they either manage day-to-day operations, have a board member, exercise board control, or have the ability of replacing the venture's CEO. These three differences in managerial approach seem profound.

FINANCIAL SUCCESS OF CVC PROGRAMS

Much of the earlier literature pointed to the relationship between financial success of venture programs and strategic success (Peterson, 1967; Fast, 1981; MacMillan et al., 1985; MacMillan et al., 1987; DeSarbo et al., 1987; Siegel et al., 1988; Sykes, 1990). This relationship is complicated here because our data are subjective, self-reported "facts". Managers may convince themselves that financially successful ventures were, in retrospect, strategic. Conversely, corporations will rarely benefit from synergies so large that they offset the poor financial performance of a venture program.

Figure 11 shows the expected positive correlation between financial and strategic success of CVC programs. The positive relationship between financial and strategic success is particularly strong for strategically successful firms. This strong positive relationship for strategically successful firms may be due partly to managers convincing themselves that any venture that makes money is strategic. CVC programs that are well positioned strategically are also successful financially, which is comforting to top managers considering launching a CVC program.

Yet inferring that imposing financial objectives on a CVC program will yield strategic results as some previous papers have suggested ignores the cause-and-effect relationships. Managing a CVC program primarily for financial success will probably produce a diversified portfolio of ventures scattered all over the market-technology familiarity matrix (see Hardyman et al., 1988) with few of the intra-venture or venture-corporation synergies that are necessary for effective corporate growth (according to Roberts and Berry, 1985, and Roberts and Meyer, 1991).

QUALITATIVE ATTRIBUTES IMPORTANT TO CVC SUCCESS

Asking CVC managers to provide qualitative factors critical to their CVC program success

might have brought forth a list of their own CVC attributes. To remove this bias of self-reported data, CVCs were asked which three firms they considered good at making direct investments in small companies and why they consider them successful. Table 6 shows the top eight corporations regarded by respondents as "good" at corporate venturing. Over half of the respondents indicated they thought these firms were successful because of one or more of the following factors: (1) a well-defined strategy, with focus, clarity, and constancy of purpose; and (2) well-organized, with independence and support from top management. Because strategic focus is reported to be a driver of success, financial performance objectives may not produce strategically successful CVC investments, as discussed above.

CONCLUSIONS

The strategies of 49 large U.S. corporations that are using corporate venture capital (CVC) for new business development were studied and evaluated. These corporations are from a wide range of industries and are thought to represent the broader spectrum of CVCs. The strategies of more successful firms were quantitatively and qualitatively compared with those of less successful firms to provide insights into effective CVC strategies.

1. Venture capital firms (VCs) are the key deal source for CVCs making strategically successful direct investments in small ventures.

To interact effectively with VCs, CVCs should directly invest in VC portfolio firms, network with VCs without necessarily investing, and contact VCs holding some of the corporation's pension assets. As an entry strategy, CVCs should invest in VC funds, becoming a VLCP; however, being a continuing investor in VC funds is not necessary in the long-run for generating deal flow.

2. Corporate familiarity with the venture's market is more important in determining strategic success than familiarity with the venture's technology.

CVCs must therefore evaluate a venture's market with greater due diligence than seems typical in current practice. Further, corporations should seek to add value to their ventures through marketing expertise.

3. Strategically successful CVCs make more investments in later rounds, as compared with less successful firms.

CVCs should either make more later round investments or structure early round investments to increase the probability of strategic success. In particular, CVCs should not exercise excessive control over their portfolio firms.

4. The financial performance of CVC programs is positively correlated with strategic success, but CVC managers report that strategic success results from a focussed strategy.

Therefore, corporations using CVC for new business development do not pay a financial price for the program. However, if the corporation is seeking to develop new businesses from its CVC program, CVC managers should not have their compensation based solely on their CVC portfolio's financial performance.

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TABLE 1. SOURCES OF INVESTMENT OPPORTUNITIES

<u>Source</u>	<u>% of All Investments from Source</u>
In-house People	32.0
Venture Capital Firms	28.2
Unsolicited Business Plans	17.0
Investment Bankers	7.6
University Research Programs	5.8
Consultants	4.9
Miscellaneous Networking ⁺	<u>4.5</u>
	100.0%

⁺Primarily at conferences

**TABLE 2. STATISTICAL COMPARISON OF
SOURCES OF INVESTMENT OPPORTUNITIES**

	Unaffiliated Venture Capitalists*	All Venture Capitalists**
Critical t-value ⁺ (Successful-Unsuccessful)	2.06	1.48
p ⁺⁺	0.025	0.10
	Universities	Primary Source Distribution (see Figure 3)
Critical t-value	1.41	1.12
p	0.10	0.15

⁺ t-value calculated as (mean of Successful–mean of Unsuccessful)/pooled standard deviation. Therefore, positive numbers indicate that successful firms use this strategy to a greater extent, negative values indicate that successful firms use this strategy less.

⁺⁺ Probability that we are mistaken in believing that a difference between successful and unsuccessful firms exists, based on a one-sided t-test. Lower values indicate greater statistical significance.

^{*} Unaffiliated are VC funds with which the corporation is in contact, but in which the corporation has not invested money, i.e. the corporation is not an LP of the VC.

^{**} This category of VCs includes all deals from VCs.

**TABLE 3. STATISTICAL COMPARISON OF
MARKET AND TECHNOLOGY DIVERSIFICATION STRATEGIES**

		Market Familiarity*	Technology Familiarity
25 Successful	Average:	2.90	3.40
	Std. Dev.:	0.80	0.79
24 Unsuccessful	Average:	3.33	3.44
	Std. Dev.:	1.06	1.10
Critical t-value ⁺ (Successful–Unsuccessful)		–1.59	–0.13
p ⁺⁺		0.08	0.50

* See Figures 5 and 6 for definition of market and technology familiarity.

⁺ t-value calculated as (mean of Successful–mean of Unsuccessful)/pooled standard deviation. Therefore, positive numbers indicate that successful firms use this strategy to a greater extent, negative values indicate that successful firms use this strategy less.

⁺⁺ Probability that we are mistaken in believing that a difference between successful and unsuccessful firms exists, based on a one-sided t-test. Lower values indicate greater statistical significance.

TABLE 4. COMPARISON OF INVESTMENT CRITERIA OF CVCs AND VCs*

Most Frequently Rated <u>Essential</u>	% CVC	% VC
Capable of sustained effort	67	64
Familiar with market	67	62
Able to evaluate and react well to risk	48	NA
Market/Industry attractive to corporation	39	NA
Product fits with corporation's strategy	37	NA
Target market enjoys high growth rate	35	43
Product can be protected	31	29
Entrepreneur demonstrated leadership	31	50
Return 10X investment in 5–10 years	28	50
Criteria in top ten for VC, but not CVC		
Articulate in discussing venture	18	31
Track record relevant to venture	15	37
Investment can be easily made liquid	10	44

*Source: Siegel et al. (1988).

TABLE 5. STATISTICAL COMPARISON OF TIMING OF INVESTMENTS

	Zero/Seed Stage	First Round Investments
Critical t-value*	-2.88	-2.17
(Successful-Unsuccessful)		
p ⁺	0.005	0.02
	Second Stage	After Initial Public Offering
Critical t-value	2.45	1.84
(Successful-Unsuccessful)		
p	0.01	0.05

* t-value calculated as (mean of Successful-mean of Unsuccessful)/pooled standard deviation.

Therefore, positive numbers indicate that successful firms use this strategy to a greater extent, negative values indicate that successful firms use this strategy less.

⁺ Probability that we are mistaken in believing that a difference between successful and unsuccessful firms exists, based on a one-sided t-test. Lower values indicate greater statistical significance.

**TABLE 6. CORPORATE VENTURERS REGARDED AS "GOOD" AT VENTURING
BY OTHER CORPORATE VENTURERS**

Corporation	% of Respondents Mentioning Firm as "Good"
3M	44
DuPont	15
Eli Lilly	13
General Electric	13
Corning	10
Hoffman-La Roche	10
IBM	10
Monsanto	10

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- Figure 11 Financial and strategic success are positively correlated, particularly for strategically successful CVC programs.

Figure 1. The complex processes of a corporate venture capital program.

Developing the venture program	Establish venture goals and focus Formulate venture group structure and strategy
Initiating investments	Uncover investment opportunities Establish investment selection criteria Structure and make investments
Managing the investment portfolio	Assist the management of individual firms Foster synergies among portfolio firms Help determine each portfolio firm's strategy
Assimilating investments into business	Establish common strategies among firms Develop significant new business group Transfer venture expertise into core businesses

Figure 2. Examination of differences in average deal sources of successful and unsuccessful firms indicates that successful firms use venture capitalists as a deal source to a greater extent

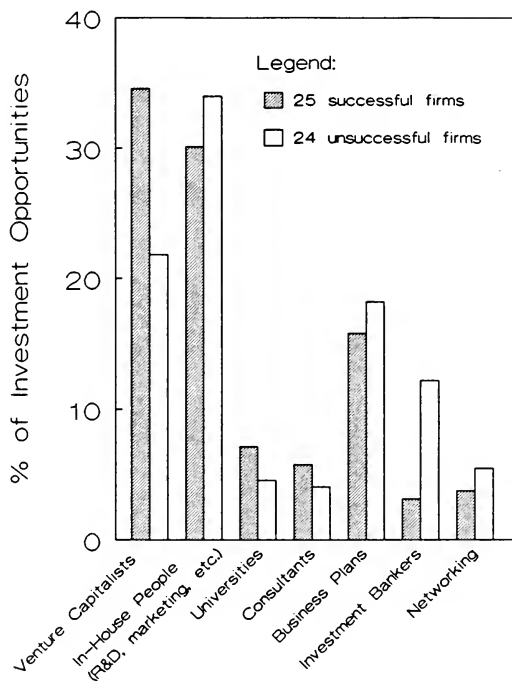


Figure 3. Examination of differences in primary deal sources of successful and unsuccessful firms indicates that successful firms use venture capitalists as a deal source to a greater extent.

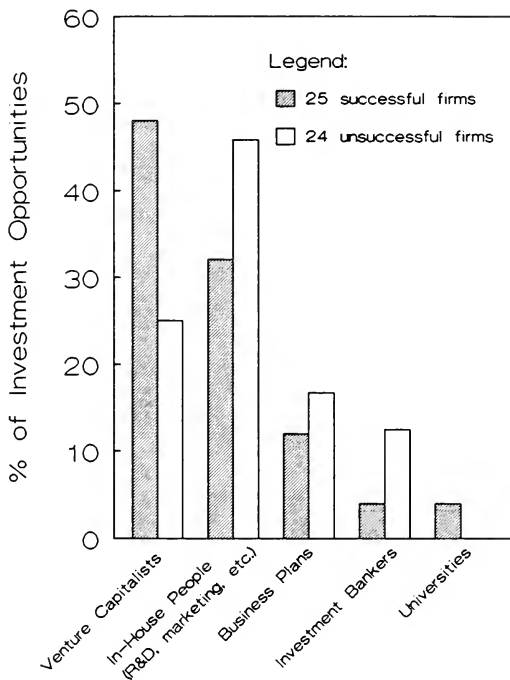
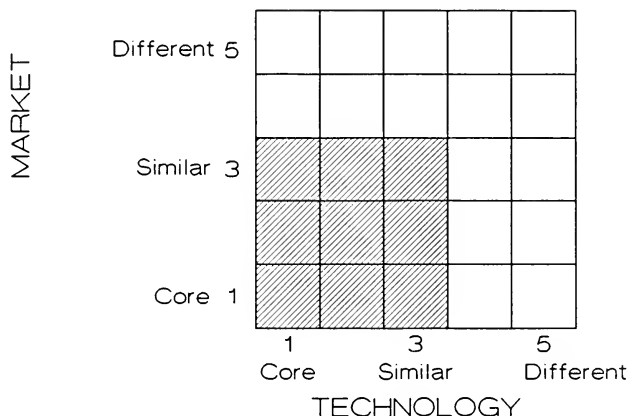


Figure 4. Diversification is harder than sticking-to-the-knitting in corporate venture capital investing.



COMPARISON OF OVERALL STRATEGY



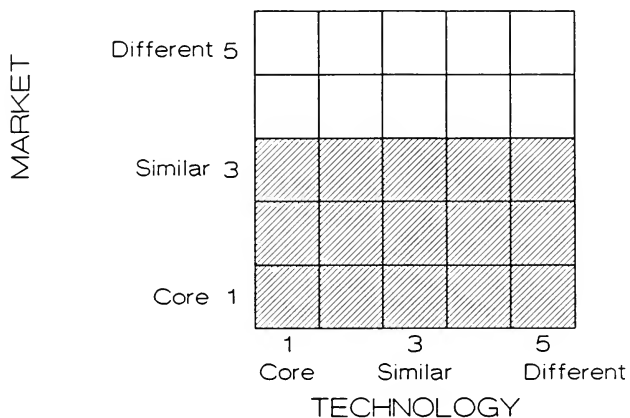
	Sticking -to- Knitting	Diversification
Legend		
Number	23	26
Success Average	3.696	3.308
Standard Deviation	0.822	0.736
Comparative t value	1.521	

Figure 5. Sticking-to-your-market is more successful than diversifying.

Diversifying in the market dimension is at least as difficult as diversifying in the technology dimension (see Figure 6).



COMPARISON OF MARKET STRATEGY



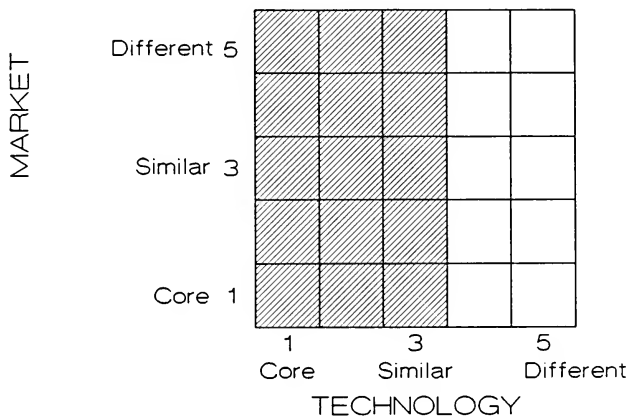
	Sticking -to- Market	Diversification
Legend		
Number	33	16
Success Average	3.576	3.250
Standard Deviation	0.792	0.683
Comparative t value	1.216	

Figure 6. Sticking-to-your-technology is more successful than diversifying.
Diversifying in the market dimension is at least as difficult as diversifying in the technology dimension (see Figure 5).



COMPARISON OF TECHNOLOGY STRATEGY



	Sticking -to- Technology	Diversification
Legend		
Number	29	20
Success Average	3.759	3.350
Standard Deviation	1.431	0.745
Comparative t value	1.272	

Figure 7. Investing in later rounds increases the likelihood of strategic success.

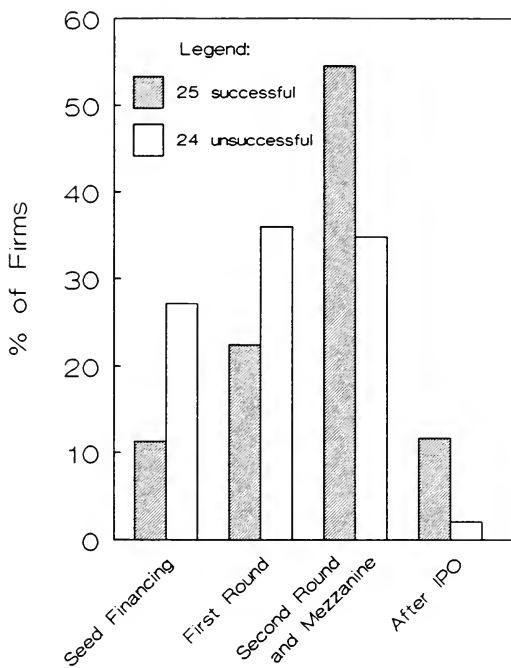


Figure 8. Investing in later rounds increases the likelihood of strategic success, independent of diversification strategies. See Figure 4 for definition of "diversification".

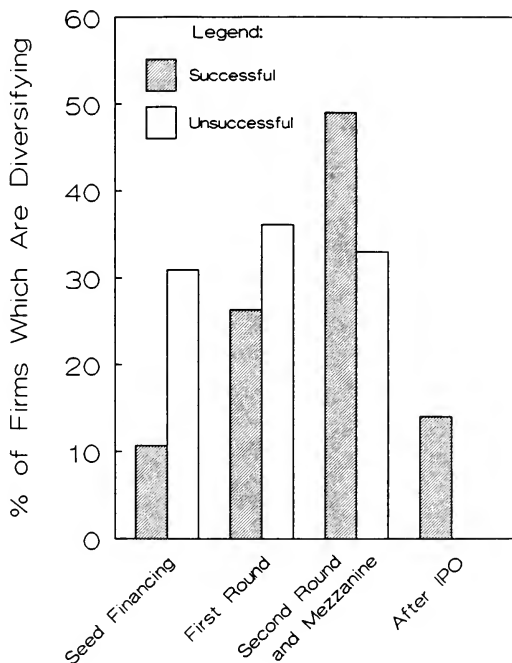


Figure 9. Similar types of investment structures are used by both successful and unsuccessful CVCs.

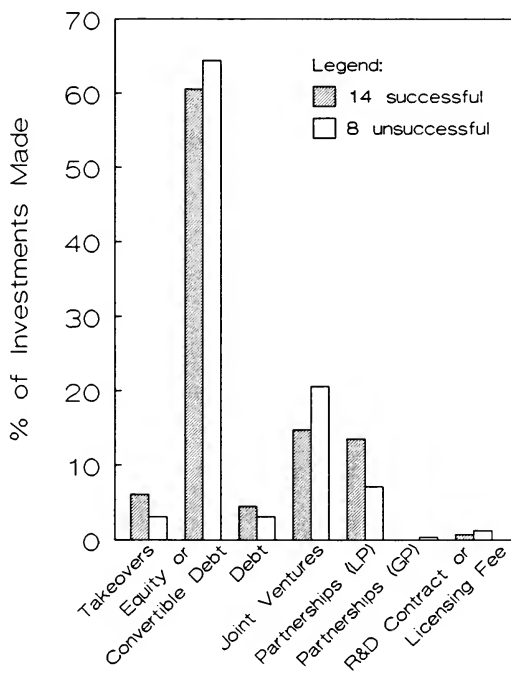


Figure 10. Successful CVCs take lower initial equity positions, develop and foster supplementary business relationships more effectively, and exercise less control over ventures than do unsuccessful CVCs.

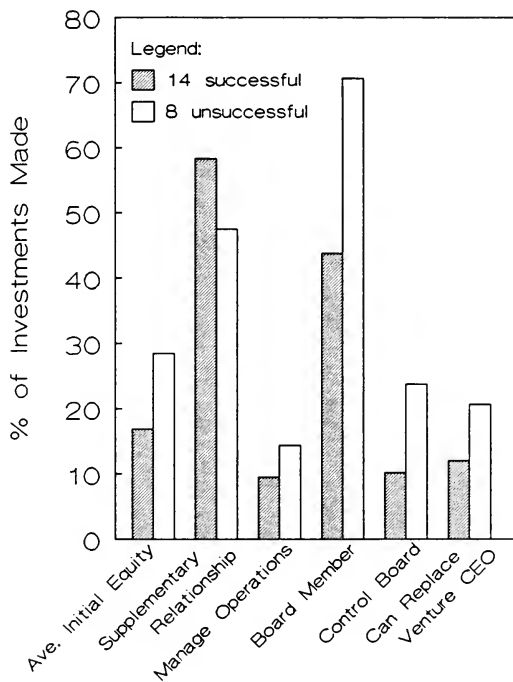
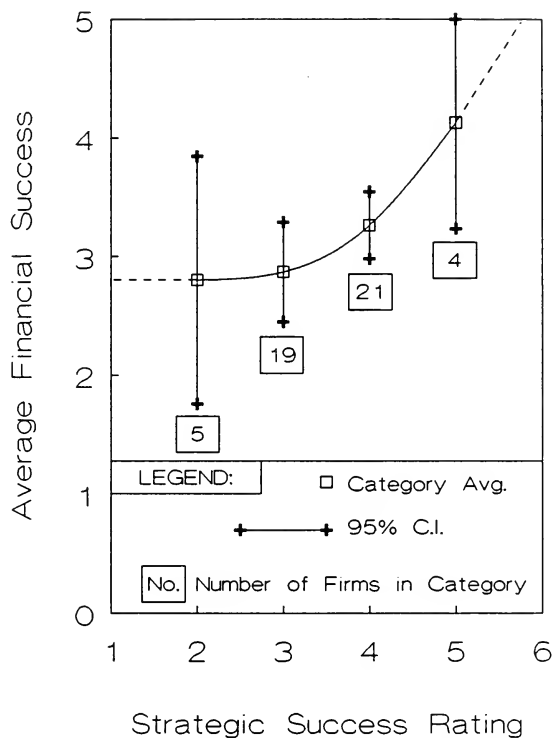


Figure 11. Financial and strategic success are positively correlated, particularly for strategically successful CVC programs.



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